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MISCELLANEOUS.

131. Proposed by SAUL EPSTEIN, Ph. D., Professor of Mathematics, University of North Carolina.

Find a power series for π^{nx} (n =any integer).

132. Proposed by M. A. GRUBER, A. M., War Department, Washington, D. C.

Six officers of different grades (1, 2, 3, 4, 5, 6) from each of six branches of the army (a, b, c, d, e, f) are to be arranged in a square so that each rank and each file shall have an officer of each grade and each branch. Can it be done? If not, prove it. The arrangement of five officers of each kind is easy.

133. Proposed by HARRY S. VANDIVER, Bala, Pa.

If a group G of order mn has a subgroup H of order n , and if n has no prime factor which is less than m , show that H must be a self-conjugate subgroup. (Frobenius.)

134. Proposed by F. P. MATZ, Sc. D., Ph. D., Professor of Mathematics and Astronomy in Defiance College, Defiance, Ohio.

Give a complete solution of the Jacobian equation $\kappa^2 \operatorname{sn}^4 u + 2\kappa^2 \operatorname{sn}^2 u + 1 = 0$.

BOOKS AND PERIODICALS.

Accounting and Business Practice. By John H. Moore, Commercial Department, Boston High School, and George W. Miner, Commercial Department, Westfield (Mass.) High School. 8vo. Cloth, 400 pages. List price, \$1.50; mailing price, \$1.55. Boston: Ginn & Co.

"Accounting and Business Practice is a thorough, practical, and comprehensive text for the use of teachers and students of book-keeping. It is intended for use in high schools, private schools, and all institutions where accounting is taught, and is well adapted for teaching by correspondence. Attractive blank books and business forms accompany the text. The work is arranged in the following general divisions: Introductory, presenting a series of definite lessons for beginners embracing lesson outlines, exercises for class drills, two brief sets in elementary accounting, and two sets for business practice. Intermediate, presenting the subject of drafts, three sets of more advanced business practice, introducing the use of special columns, and auxiliary ledgers. Advanced, containing three sets, single entry, corporation accounting (a set on manufacturing), and banking.

A few special features: 1. The work is complete in itself and is not accompanied by a system of vouchers. 2. The work is elastic and may be used in the study of theory only, or of theory and business practice. 3. Financial statements are given in connection with all the different sets. 4. Class exercises are given in connection with every important subject introduced. 5. The text is accompanied by a Teachers' Manual giving a large amount of material for class drills in practical accounting, arranged in a series of lessons carefully graded."

The Universal Solution for Numerical and Literal Equations by which the Roots of Equations of All Degrees can be expressed in terms of their Coefficients. By M. A. McGinnis. 8vo. Cloth, 194 pages. Price, \$2.00. Kansas City: The Mathematical Book Co.

We cannot praise this book very highly for the merit it possesses, since the really meritorious part of the book deals with matter quite irrelevant to what the work professes

to discuss, and to solve, viz., the solution of the general equation of the fifth and other degrees. The book contains some ingenious methods of solving certain numerical equations, but because of these methods it should have received a more modest title.

Mr. McGinnis's solution of the Sixth Degree is quite erroneous. Mr. W. M. H. Woodward, pp. 153-150, professes to have demolished the proof of the impossibility of solving the general quantic by radicals given in Serret's *Algebra Supérieure*. But judging from his conclusion, it appears that Mr. Woodward does not understand the argument put forth in *Algebra Supérieure*. B. F. F.

An Elementary Text-book on the Differential and Integral Calculus. By William H. Echols, Professor of Mathematics in the University of Virginia. 8vo. Cloth, x + 480 pages. Price, \$2.00. New York: Henry Holt & Co.

In this work are very ably treated many interesting subjects not to be found in any other American text-book on the Calculus.

In order to form a connecting link between Algebra and the Calculus, an Introduction presents in an admirable way the fundamental and essential features of Arithmetic and Algebra. In the Introduction are defined and explained such ideas as *absolute number*, *the absolute-number continuum*, *the real-number system*, *the limit of a variable*, etc., ideas upon which rest the whole structure of the Calculus. Throughout the work, in establishing the principles much attention is given to the applications of those principles. An unusually large number of interesting and well selected problems are appended to each section.

The work is divided into two books. Book I treats of functions of one variable, and is divided into four parts. Part I embraces the Principles of the Differential Calculus; Part II applies these principles to Geometry; Part III establishes the Principles of the Integral Calculus, and Part IV embraces the application of these principles. Book II treats of functions of more than one variable. It is divided into three parts. The first part which is Part V of the entire work, embraces Principles and Theory of Differentiation; Part VI applies the principles to surfaces, and Part VII treats of Integration of more than one Variable and Multiple Integration.

Part VI extends the principles of the Calculus to surfaces. Here we have such problems as: To find the principal radii to a surface; To determine the umbilics on a surface, etc. Also here is discussed pretty fully such subjects as spherical curvature, envelopes of surfaces, etc.

The author, while acknowledging that the introduction of a new symbolism is always objectionable, yet feels called upon to introduce the "English pound" mark for the symbol of passing to the limit. This is certainly desirable. But personally we prefer Professor Oliver's symbol, \Rightarrow , for "converging to" or approaches, to Professor Echols's symbol, $(=)$, which he introduces to mean the same thing.

The work is a most valuable addition to the many meritorious books on the same subject which have appeared in recent years. B. F. F.

The School Visitor. Published by John S. Royer & Sons, No. 247 North 17th Street, Columbus, Ohio. Price per year, \$1.00, payable in advance.

The Mathematical Department is full of good problems for the teacher of Arithmetic, Algebra and Geometry. Mr. Royer is the author of a Higher Mental Arithmetic, a Geography, and several other books of great interest and value to teachers. B. F. F.

ERRATA.

Vol. IX, page 207, problem 106, Diophantine Analysis, for "rational triangle" read, *rational right triangle*.

Vol. IX, page 264, last line of solution of problem 100, for "determinate" read, *indeterminate*; page 265, equation for " $Ay'q +$ " read $Ay' + q$.